

**EVALUATION OF FUNCTIONALITY AND USABILITY FOR SMART  
CARD ISSUANCE SYSTEM**

A Thesis submitted to the College of Arts and Sciences in full fulfillment of the  
requirements for the degree of Master of Science (Information Technology)  
Universiti Utara Malaysia

by  
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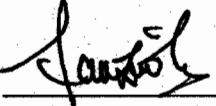
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## **ABSTRACT**

One of the ways to evaluate a smart card issuance system's functional qualities and usability is by evaluating it based on measurements that have been defined for each criterion. A smart card issuance system is a system that will produce smart cards for the students in local universities. Although this system has been used widely in the local universities, there are a number of complaints from the users about the functionality and usability of the system. The functionality and usability of the smart card issuance system is one of the key features of its success. This study aims to evaluate this system on its functionality and usability. The measures for evaluating its functionality and usability are defined in this study. It is hoped that by conducting the research for evaluating this smart card issuance system, it will provide the solution and suggestion on ways and methods to enhance the quality of the system itself.

## **ABSTRAK**

Salah satu kaedah untuk melakukan penilaian terhadap sistem pengeluaran kad pintar dari aspek fungsian dan kebolehgunaan adalah berdasarkan kriteria pengukuran yang ditentukan. Sistem pengeluaran kad pintar adalah sistem yang akan mengendalikan pengeluaran kad pintar kepada pelajar di semua universiti tempatan. Walaupun penggunaan sistem ini adalah telah meluas di universiti tempatan, namun masih terdapat beberapa pengguna yang masih tidak berpuas hati dengan fungsian dan kebolehgunaan sistem ini. Fungsian sistem dan kebolehgunaan adalah ciri kejayaan pada sesebuah sistem. Kajian ini bertujuan untuk melihat fungsian dan kebolehgunaan untuk sistem pengeluaran kad. Kriteria pengukuran bagi penilaian terhadap fungsian dan kebolehgunaan sistem ini dibincangkan. Adalah diharapkan kajian yang dilakukan ke atas sistem pengeluaran kad, dapat memberikan penyelesaian dan cadangan terbaik dalam meningkatkan kualiti sistem berkenaan.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the study**

Smart card technology is being used in a majority of government institutions in Malaysia. It is being used in various applications such as door access control, student attendance, library system and bus ticketing system in many of the local universities in Malaysia. The integrated chip in the smart card provides the means of storing information and can be accessed using several interfaces and systems that are being used throughout the various facilities in these universities.

Considering the importance and sensitivities of the information being manipulated and accessed using these cards, it is exceptionally important for the organizations to ensure that the cards being issued contain correct and precise information. Therefore, the quality of the systems issuing these cards needs to be ensured and guaranteed so that the overall process of producing the cards and the later stage of manipulating the information in it will be smooth and error free.

To achieve this, a good evaluation process and method needs to be applied so that no important factor of the evaluation process is overlooked. The ISO/IEC 9126:2001 (Quality Model) provides one of the best guidelines for this purpose. It is part of the ISO 9126 which is an international standard for the evaluation of software quality. The standard is divided into four parts, which address, respectively - the quality model; external metrics; internal metrics; and the quality in use metrics.

The quality model is established in the first part of the standard for the evaluation of software quality, which is also the part mainly utilized in this research.

The contents of  
the thesis is for  
internal user  
only

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